Message

**From:** Hays, David C Jr CIV USARMY CENWK (USA) [David.C.Hays@usace.army.mil]
**Sent:** 5/4/2020 5:44:30 PM
**To:** Praskins, Wayne [Praskins.Wayne@epa.gov]
**CC:** Clements, Julie A CIV (USA) [Julie.A.Clements@usace.army.mil]; Walker, Stuart [Walker.Stuart@epa.gov]; Rankins, Jonathan E CIV USARMY CEMVS (USA) [Jonathan.E.Rankins@usace.army.mil]
**Subject:** RE: [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx
**Attachments:** Using Navy ongestion assumptions Example BPRGs for Dusts HPNS.xlsx

Wayne, please see attached for Dust BPRG values using the Navy's ingestion assumptions as inputs to the BPRG calculator. Note the most restrictive value is Ra-226 in equilibrium with its decay chain (7.3 dpm/100 sq. cm). This is 36% of the Navy's assumed removable fraction, and easier for them to prove if below (not ideal but better and likely near minimal detection limit now without changing counting time). I have not looked more into the Ra-226 to Rn-222+D equilibrium information discussed in last few emails but will do so (would likely increase PRG).

Do you or Stuart have additional comments to the report? Please note based on comments from Julie and Jon I am re-organizing the report for readability.

Dave

**From:** Hays, David C Jr CIV USARMY CENWK (USA)
**Sent:** Thursday, April 30, 2020 12:51 PM
**To:** 'Praskins, Wayne' <Praskins.Wayne@epa.gov>; Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>
**Cc:** Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; 'Walker, Stuart' <Walker.Stuart@epa.gov>
**Subject:** RE: [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

Wayne, I finally found the reference in my files, please see attached. Note: it does not have a calculation method specific to Ra-226 but its explanation of Sr-90/Y-90 and Th-232 presents the principle. Does not answer the Rn question.

**From:** Hays, David C Jr CIV USARMY CENWK (USA)
**Sent:** Wednesday, April 29, 2020 6:43 AM
**To:** Praskins, Wayne <Praskins.Wayne@epa.gov>; Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>
**Cc:** Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; Walker, Stuart <Walker.Stuart@epa.gov>
**Subject:** RE: [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

Wayne, Good morning. I will have to find it but will send you a guidance document explaining the counting contribution approach. Per our last discussion I will rerun the BPRG calculator using the Navy's ingestion mass which will increase the PRG. Our previous work suggests an increase by roughly a factor of 3, but will send once done. Per our discussions, a hot spot or elevated measurement criteria factor approach could mitigate the low PRG and difficultly in counting.

FYI: Because the lowest PRG is used, assuming any other alpha emitting isotope is actually from Ra-226 chain is conservative. We are saying even the Am-241, U-235, Th-232 chain, etc. alphas are Ra-226 chain so very conservative. The issue of equilibrium is correct. Recall I mentioned this in our conversations/email. Since Rn-222 is an inert gas it may be assumed that some of that gas escapes the source and plates back out on the surface and or is removed from the room. Thus disequilibrium. Given the isotopic mix in each building, this loss may or may not be over shadowed by the 1$^{st}$ assumption of all alphas are from the Ra-226 chain. If any building only has Ra-226 contamination the equilibrium issue is a larger factor to consider. It will take some agreed to assumptions by USEPA and USDON to get beyond the equilibrium issue. Fractions in air, as plate out, and removed have been studied and literature values exist.

FYSA: The NRC has recently reasserted its former Reg Guide 1.86 values for release on its licensees. That is essentially the basis for the USDON numbers.

**From:** Praskins, Wayne <Praskins.Wayne@epa.gov>
**Sent:** Tuesday, April 28, 2020 3:57 PM
**To:** Hays, David C Jr CIV USARMY CENWK (USA) <David.C.Hays@usace.army.mil>; Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>
**Cc:** Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; Walker, Stuart <Walker.Stuart@epa.gov>
**Subject:** RE: [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

Dave –

The lowest dust-only BPRG for an alpha emitter is 1.2 dpm/100cm2 (Ra-226). In one of our discussions, if I understand correctly, you noted that: i) Ra-226 is expected to be in secular equilibrium with its progeny; ii) there are 5 alpha-emitters in the chain; and iii) therefore a higher gross alpha screening level of 6 dpm/100cm2 (5 x 1.2) is appropriate.

I discussed this with Dave Kappelman, a health physicist with EPA's Emergency Response Team (ERT). Dave's opinion is that it is more appropriate to use the 1.2 dpm/100cm2 level as the gross alpha screening value (rather than the higher 6 dpm/100cm2 level) because we can't be sure it's only Ra-226 contributing to a gross alpha measurement and, even if we thought only Ra-226 was present, we can't be sure that all four progeny are present at a 1:1 ratio.

What do you think?

Wayne Praskins | Superfund Project Manager
**U.S. Environmental Protection Agency Region 9**
75 Hawthorne St. (SFD-7-3)
San Francisco, CA 94105
415-972-3181

**From:** Hays, David C Jr CIV USARMY CENWK (USA) <David.C.Hays@usace.army.mil>
**Sent:** Friday, April 17, 2020 9:36 AM
**To:** Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>; Praskins, Wayne <Praskins.Wayne@epa.gov>
**Cc:** Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; Walker, Stuart <Walker.Stuart@epa.gov>
**Subject:** RE: [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

All, please see attached. The file titled "example…." Presents the BPRG for dusts. PLEASE see the notes discussions. The other 2 files are the outputs from the BPRG calculator and the individual tables as presented in the "example …" file.

Have a great weekend.
Dave

**From:** Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>
**Sent:** Friday, April 17, 2020 11:07 AM
**To:** Praskins, Wayne <Praskins.Wayne@epa.gov>; Hays, David C Jr CIV USARMY CENWK (USA) <David.C.Hays@usace.army.mil>
**Cc:** Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; Walker, Stuart <Walker.Stuart@epa.gov>
**Subject:** RE: [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

Might have to factor in the difference in SFs , if applicable

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**From:** Praskins, Wayne <Praskins.Wayne@epa.gov>
**Date:** Thursday, Apr 16, 2020, 11:00 PM
**To:** Hays, David C Jr CIV USARMY CENWK (USA) <David.C.Hays@usace.army.mil>
**Cc:** Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>, Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>, Walker, Stuart <Walker.Stuart@epa.gov>
**Subject:** [Non-DoD Source] FW: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

Dave -

We had an action item from our call earlier today about you coming up with dust-only PRGs at the 1 x 10-4 risk level using the BPRG calculator. Can I get the values from the spreadsheet Jon shared in January (attached) by assuming a linear relationship between the RG and ingestion risk?

For example, would the dust only PRG for Ra-226 be: 100 dpm/cm2 x (1 x 10-4)/(2.7 x 10-4) = 37 dpm/cm2?

Wayne Praskins | Superfund Project Manager
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-----Original Message-----
From: Rankins, Jonathan E CIV USARMY CEMVS (USA) <Jonathan.E.Rankins@usace.army.mil>
Sent: Friday, January 31, 2020 10:33 AM
To: Hays, David C Jr CIV USARMY CENWK (USA) <David.C.Hays@usace.army.mil>; Clements, Julie A CIV (USA) <Julie.A.Clements@usace.army.mil>; Praskins, Wayne <Praskins.Wayne@epa.gov>
Subject: Navy RGs vs Res BPRGs Summary_Res Pathway Risk Comparisons (002).xlsx

Just a summary table with all the pathway comparisons, adult and child.